

00-4 1941

# CARNEGIE

## MAGAZINE

CARNEGIE  
INSTITUTE

CARNEGIE  
INSTITUTE OF TECHNOLOGY

CARNEGIE  
LIBRARY

VOLUME XV PITTSBURGH, PA., SEPTEMBER 1941 NUMBER 4



TRAVELING CASES SUCH AS THIS  
TAKE THE CARNEGIE MUSEUM TO OUR  
SCHOOL CHILDREN

One of the 367 cases that are studied and examined during  
the year in various classrooms of the city

(See Page 103)

## THE CARNEGIE MAGAZINE

### THE CARNEGIE MAGAZINE

PUBLISHED MONTHLY, EXCEPTING JULY AND AUGUST, IN THE INTEREST OF THE CARNEGIE INSTITUTE, THE CARNEGIE INSTITUTE OF TECHNOLOGY, AND THE CARNEGIE LIBRARY, PITTSBURGH, PA. SUBSCRIPTION PRICE ONE DOLLAR A YEAR; SINGLE COPIES TEN CENTS. ON SALE AT INSTITUTE POST OFFICE, AND THE BOOK DEPARTMENTS OF KAUFMANN'S AND THE JOSEPH HORNE COMPANY.

OFFICE OF THE PRESIDENT OF  
THE CARNEGIE INSTITUTE  
SAMUEL HARDEN CHURCH, Editor  
DOROTHY NUTTALL, Editorial Assistant

#### EDITORIAL COUNCIL

ANDREY AVINOFF ROBERT E. DOHERTY  
MARSHALL BIDWELL RALPH MUNN  
HOMER SAINT-GAUDENS

VOLUME XV NUMBER 4  
SEPTEMBER 1941

France, thou mayst hold a serpent by the tongue,  
A chafed lion by the mortal paw,  
A fasting tiger safer by the tooth,  
Than keep in peace that hand which thou dost hold.

—KING JOHN

—32—

#### THE CARNEGIE INSTITUTE

Admission Free

Hours: Daily 10 A.M. to 6 P.M. Sunday 2 to 6 P.M.

#### CARNEGIE LIBRARY OF PITTSBURGH

Admission Free

Hours: Daily 9 A.M. to 10 P.M. Sunday 2 to 6 P.M.

#### FREE ORGAN RECITALS

From October to July. Every Saturday evening at 8:15 o'clock, and every Sunday afternoon at 4:00 o'clock.

MARSHALL BIDWELL, Organist

—33—

The Carnegie Institute, in the broadest sense, holds its possessions in trust for mankind and for the constant welfare and happiness of the race. Anyone, therefore, who by a gift of beautiful works of art, or objects of scientific value, or a donation to its financial resources, aids in the growth of these collections and the extension of its service is contributing substantially to the glorious mission of the Institute.

The Carnegie Institute will be the final home of every worthy collection of pictures and museum objects when the men and women who have chosen them wish to have the world enjoy them.

—ANDREW CARNEGIE

THE CARNEGIE MAGAZINE freely grants permission to reprint without limit articles that appear in its pages, with the usual credit.

#### FOUNDER'S DAY 1941

On Thursday evening, October 23, following the precedent of the last few years, the annual Founder's Day celebration will be held in the Carnegie Music Hall at 8 o'clock exactly. The speaker will be a notable national figure; and the program will also include music and the other regular features, with an invitation to a preview of the 1941 fall exhibition, entitled, "Directions in American Painting." This invitation will follow an announcement of the prizes that have been awarded by the jury to the outstanding pictures in the exhibition. The galleries containing the paintings will be thrown open to the general public at 10 o'clock on the morning of October 24.

#### "I DARE SAY"

I seldom save magazines, but there is one I find that I am always loath to throw away—it is THE CARNEGIE MAGAZINE which comes to me monthly and which inevitably reminds me of the wealth of treasure that is contained in our own Carnegie Institute. Since the fall of Greece, its exquisite models and reproductions of the great sculptural treasures of Athens have assumed an added value; and it seems to me that the parents and teachers who fail to direct the steps of school-age children to the Carnegie Institute are signally failing in their responsibilities today. The model there of the Parthenon, and the extraordinary reproductions of the Elgin Marbles, provide a more eloquent reminder than any item in the news of the tragedy that has befallen Greece. In the Carnegie Institute one item alone is worth looking at for a grave, inspiring moment: the East Pediment of the Parthenon with its eternal remnants of everlasting beauty friezing its façade.

It is significant, I think, that most of our great enterprisers have turned to art as a final depository for their accumulations. The debt that Pittsburgh owes to Andrew Carnegie is only now accumulating its great compound interest.

—FLORENCE FISHER PARRY

[The Pittsburgh Press, May 31, 1941]

[Mrs. Parry will be glad to learn that the parents of Pittsburgh do send their children to the Carnegie Institute. Every day hundreds of them come here to study these objects of scientific and artistic value under the tutelage of the curators and docents of the Carnegie Institute staff. Last year the total attendance of children in classes and groups was over 186,000, besides many who came individually.]

#### IS THERE A UNIVERSAL GENIUS?

The universal genius who can manage all himself has yet to appear. Only one with the genius to recognize others of different genius and harness them to his own car can approach the "universal." It is a case of different but co-operating abilities, each part of the complicated machine fitting into its right place, and there performing its duty without jarring.

—ANDREW CARNEGIE

## FORTY YEARS OF LIBRARY SCHOOL EDUCATION

BY VICTOR C. SHOWERS

*Assistant, Reference Department, Carnegie Library of Pittsburgh*



AROUND the turn of the century, when the American public-library movement was shifting into high gear, library administrators without exception placed great emphasis upon service to children. This was

only proper, for school libraries were unknown at that time, and the public library offered the sole opportunity most children had to acquire a knowledge and love of books. Besides, nobody in those days, not even library administrators, was remotely concerned with such new-fangled ideas as adult education.

When, therefore, the Carnegie Library School admitted its first class forty years ago this month, it was for the purpose of training them exclusively in work with children. Today as an integral part of Carnegie Tech, it confers the degree of Bachelor of Science in Library Science on its graduates, and offers courses in all the usual types of library service. But in 1901, and for fifteen years thereafter, under the direction of Edwin H. Anderson, the first librarian, it was operated as a department of the Carnegie Library and known simply as the Training School for Children's Librarians.

As such, it occupied a unique place in the library world. Few library staff members were professionally trained in those early days, but many were beginning to feel keenly their lack of training. Of these, the ones who liked best to work with children were drawn

inescapably toward Pittsburgh. Other library schools existed, but they did not give special attention to this phase of the work. In the minds of librarians throughout the country Carnegie Library School and training for service to children became almost synonymous.

Perhaps that is why the students of the School have had such varied backgrounds—that, in addition to the high standard that has always prevailed in the policy of admission. Classes have with a few exceptions been limited to 30 or 40 students from the beginning, and the total number of graduates to date is only 1,088. Yet they have come from 167 American and 22 foreign colleges and universities. They have left homes in 41 states of the Union and 11 foreign countries to attend the School.

Not all the early graduates remained children's librarians, of course, but most of the pioneer children's librarians were graduates of the School. With their services in continual demand, they carried the lessons of their training from the Atlantic to the Pacific, influencing librarianship directly through their own activities and still more profoundly through the thousands of fellow-workers and students with whom they came into daily contact.

It is appropriate that this anniversary should find one of those pioneers still associated with the School and with the Carnegie Library. Elva S. Smith, head of the boys and girls department here, has today the same buoyant enthusiasm, sense of humor, and youthful ideas that she had when she was graduated from the School with its first class. Beside these personal qualities, the fact that she has meanwhile become a national authority on children's literature seems almost inci-



A GROUP OF STUDENTS IN THE LIBRARY SCHOOL STUDY ROOM

dental to those who know her. It is important, nevertheless, because Miss Smith, as an associate professor of the School, continues to impart some of her knowledge of this literature to successive classes of students.

In looking back over the history of the School, we are reminded that it has had the services of four women who attained exceptional prominence as administrators of library service to children: Frances Jenkins Olcott, Sarah C. N. Bogle, Effie L. Power, and Nina C. Brotherton. Miss Bogle is dead now, and the others are living far away, but all four will be well remembered by Pittsburghers because they were associated both with the Library and with the School for many years.

Miss Olcott, who became the Carnegie Library's supervisor of children's work in 1898, was appointed by Mr. Anderson as principal of the Training School for Children's Librarians and served in that post until 1911. She had always wanted to write, and when she left Pittsburgh it was not to take another library position but to become a full-fledged author. She has published more than two dozen books, most of them collections of fairy tales. Her

latest work, which appeared last year, is "The Bridge of Caravans," a description of her recent travels in the Levant.

Miss Bogle succeeded Miss Olcott as principal of the School and remained until 1920, when she became assistant secretary of the American Library Association. She was also a children's librarian as well as a school administrator, serving as head of the boys and girls department at the Carnegie Library from 1911 to 1917. After the war she became interested in library work overseas, and for six years she was director of the Paris Library School, which was operated by the American Library Association to demonstrate what a school of international character would mean to the profession. She died in 1932.

Miss Power, who was one of Miss Olcott's first students, was destined in 1929 to write what is still the standard book on library service for children. Miss Power became head of the boys and girls department in 1917, after obtaining experience in a similar position at St. Louis. Three years later she moved to Cleveland to organize children's work training at the Western Reserve Library School and to direct

work with children at the great Cleveland Public Library. Though retired in 1937, she continues to give special lectures at Columbia University.

Miss Brotherton, after distinguished service as a children's librarian and director of school libraries in Cleveland and Pittsburgh, became principal of Carnegie Library School in 1920. She was called by Simmons College in 1927, where she continues to train children's librarians for the New England area.

In recent years Carnegie's graduates, like the library profession itself, have tended to branch out more and more. One became a research assistant at the Metro-Goldwyn-Mayer studios in Culver City, California. Another became chief editor of "The Art Index" in New York City. One works for the Rockefeller Foundation, another for the Tennessee Valley Authority, a third for the Army Air Corps—all three in library positions. One is in charge of the book department of a prominent store in Cleveland, a second owns and operates a children's book shop in New Haven. These particular alumnae have wandered a little farther from the beaten track than the majority, but it would be difficult to think of any type of library position that is not currently held by at least one graduate of the School. Seventy per cent of them through the years have trained for children's work, but experience shows that they may later preside over a state library commission or a steel company's library, a public library branch, or an art reference collection.

No matter where they go or what they become, however, the graduates can keep in touch with one another through the Carnegie Library School Association, which was organized in 1916 and has since been continuously active as a national alumnae body, with local chapters in Pittsburgh and several other cities. Between 1922 and 1929, committees of the Association compiled eight anthologies of poetry suitable for various holidays, the first of which

"Christmas in Poetry." These anthologies were published by the H. W. Wilson Company of New York, and royalties are still being received from their sale. The Association also has been instrumental in building up a large student loan fund.

From what has been said so far, it might be supposed that librarians never settle down and get married like other people. A recent survey, however, of the classes of 1930 to 1934 inclusive shows that 90 of the 188 students in those classes were married within eight years of their graduation. It may be presumed, of course, that some of the 90 continued to pursue their careers.

The School has its own collection of books for student use—7,500 volumes, including much of the standard professional literature. Yet it remains true that the School enjoys a marked advantage by its close connection with the Carnegie Library. Though it became a part of Carnegie Tech in 1930, it has continued to keep its office and classrooms in the Library building,



A STUDENT AIDING A CHILD  
IN BOOK SELECTION

and the Director of the Library has remained its Director also. Thus its students have immediate access to 650,000 volumes of books and bound periodicals, which is after all a little different from 7,500.

The location of the School in the Library building gives its students other advantages too. They can observe actual library procedures day by day. They can become acquainted with practicing librarians in whatever field of work particularly interests them. Their curriculum can be, and is, seasoned by the introduction of special lectures on many phases of the work by those who are charged with performing it in one of America's larger public libraries.

For Carnegie today is a graduate school with three distinct curricula: one for general library work, one for high-school library work, and one for library work with children. The requirements of all courses are identical. Applicants must have pursued with distinction a well-balanced course in an accredited college. The library-school curriculum for each course requires the full time of the student for one year.

No discussion of the Carnegie Library School would be complete without a word about its present faculty. Frances H. Kelly, associate director and professor of administration, was formerly a branch librarian and head of the schools department of the Carnegie Library, assuming her present position in 1927. Althea M. Currin, professor of book selection, has had library experience in ten states and is now a member of the executive board of the American Library Association. Elizabeth Nesbitt, professor of story-telling and children's book selection, derived most of her practice, like Miss Kelly, by working for the Carnegie Library. Edith N. Snow, professor of cataloging and bibliography, has had a variety of positions in different parts of New England. Last summer Miss Currin and Miss Nesbitt taught at Columbia University, while Miss Snow traveled to

Chapel Hill to instruct students at the University of North Carolina. Elva S. Smith and Martha L. Barnes divide their time between the Carnegie Library and the School. In addition to these regular faculty members, Carnegie Library School draws upon the Carnegie Library and near-by institutions for part-time instructors and lecturers.

As the School completes its first forty years, its friends review its history with satisfaction but with no complacency. Libraries are so close to the lives of the people that they can never become static. New social interests and needs must be anticipated, and methods and services devised to satisfy them. To train librarians who can meet these shifting demands calls for a flexible curriculum and a faculty which is constantly alert to social change. Carnegie Library School is not what it was forty years ago; today's program will no doubt undergo equally significant modifications during the next forty years.

## CARNEGIE TECH AND FLIGHT INSTRUCTION

UNDER the Civil Aeronautics Administration of the United States government, two courses in flight training have been inaugurated at the Carnegie Institute of Technology this year. The ground school courses are taught in part by O. C. Simpson, of the department of physics at Carnegie Tech, and in part with the actual flight training by the Graham Aviation Company at the Butler airport.

Carnegie Tech is the only college in the district authorized to sponsor secondary training under the Civilian Pilot Training program, and the ground school instruction in the course includes radio and celestial navigation, meteorology, aerodynamics, and airplane structures. Graduates are eligible for further flight training in the army and navy.



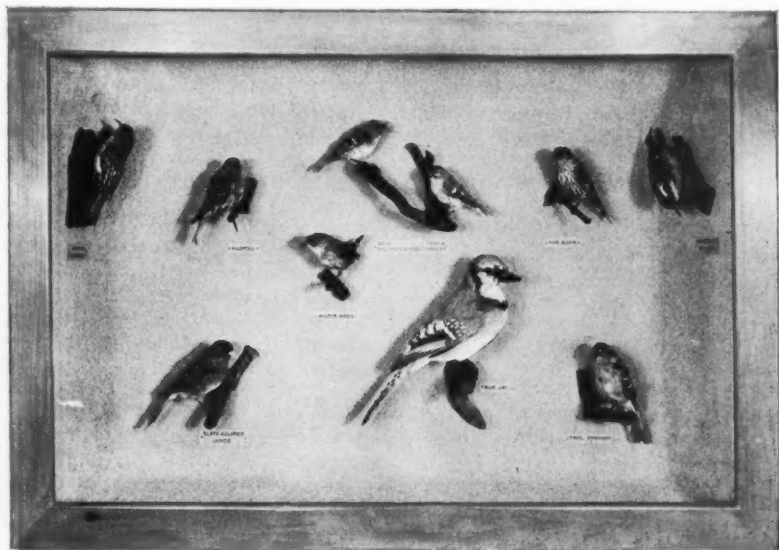
# THE MUSEUM'S TRAVELING CASES

*Sending Scientific Objects to School Children*

ACCORDING to an old Chinese proverb, "One picture is worth ten thousand words," and therein lies the value of the Carnegie Museum to the field of education. For what is a museum but a collection from the realms of nature and art of actual reproductions and realities that have been assembled so that people may be shown how other men and animals in other lands and times and in our own land and time have lived and how they are perpetuating the civilization that is our heritage from ancient days? Here representative forms of life on the earth are shown and preserved for present as well as for future generations. Great strides have been made in this field of visual education since the time, centuries ago, when a man named Hanno

brought a gorilla and placed it on view in Carthage; and from the days, too, when the Alexandrian Museum was founded by Aristotle for the instruction of Alexander the Great. But the underlying idea is the same—"One picture is worth ten thousand words."

To carry out this fundamental concept, the Carnegie Museum has gone further than simply exhibiting collections confined to its own four walls. In the new order of things, in these days when visual aids to education are recognized as vital to the training of students, the Museum must also go out and meet the people and bring certain of its educational advantages to them. Of equal importance to the scientific laboratories, the teaching and docent service, the nature clubs, and the permanent



A TRAVELING CASE—LABELLED AND ENCLOSED IN GLASS

Used in the Pittsburgh Public Schools for the study of one of our western Pennsylvania bird groups.



A BIRD HABITAT GROUP

collections in the building itself, are the peregrinating or traveling cases prepared for public use by the Museum section of education. With the cooperation of the Pittsburgh Board of Public Education, this educational feature is one of daily distribution and outstanding value.

In the 367 traveling cases known as the loan collection of the Pittsburgh Public Schools, there is study material for history, industry, birds, botany, insects, invertebrates—including snails, molluscs, and so on—mammals, fish, and minerals. There are 4,270 specimens in these cases, limited, for the most part, by public demand to that which is indigenous to western Pennsylvania.

In September these cases are transported to a central school building of the Board of Education that has been made the headquarters for visual education for the city schools. They are held there for the duration of the school year, and upon request by individual teachers are delivered from there to the various classrooms of the city. At the close of the term, in June, the entire group of cases is returned to the Museum for renovation and additions. All the work of collecting specimens and

making the cases is done by the section of education of the Museum, new cases being added constantly to fill the demands of the teachers. During 1940 there were 35 new birds mounted, 10 mammals, 23 bird skins, and 7 mammal skins. Nineteen moths and butterflies were mounted in new plastic holders, and 14 bird cases, consisting of 42 mounted birds, 5 sets of eggs and 5 nests, were also completed with

backgrounds showing the locale.

Beside these city public school cases, there are 287 others that are loaned to educational, church, and cultural organizations in the county, city, and state who have use for them. They comprise 2,023 specimens in such subjects as birds, botany, history, commercial fields, insects, invertebrates, mammals, maps, and reptiles. These displays are kept at the Museum so that they may be available at all times for loan. They may be borrowed for a period of two weeks, or in special instances for a month. There is no charge for the service, the only requirement on the part of the borrower being that he take reasonable care of the material and arrange for its transportation. These collections are very popular with county school teachers for supplementing classroom work, with women's clubs for illustrating lectures, and with scouts, summer camps, churches, the Y. M. C. A. and the Y. W. C. A. for exhibition and lecture purposes. They have not only traveled all over the state, but have also been used in conjunction with nature study in eastern Ohio; at Chautauqua, New York; and at Oglebay Park, West



Virginia. During 1940 these so-called county cases were viewed and studied by 76,634 persons.

Although visual education is supposedly a comparatively new experiment in school administration, the Carnegie Museum started out in a small way to lend "circulating collections" as early as 1900. In his annual report for that year, Dr. W. J. Holland, Director of the Carnegie Museum at that time, says of these groups:

"In order to aid teachers in the schools of the city, the Director conceived the plan of preparing a series of small collections of the commoner birds, mammals, insects, and minerals, and placing them in neat and portable cases, correctly labelled, and accompanied by a brief account of each species. A number of these cases have been prepared, and they will be loaned to schools for a limited time, and, when their work has been done in one school, transferred to another. It is believed that this plan, which, so far as we know, has not been attempted by any other institution of like character, will prove to be useful in widening the influence of the Museum, and cultivating knowledge in the schools."

In 1901 Dr. Holland has noted that "During the past year collections of birds and insects, prepared in the Museum and mounted in portable cases, so that they may be easily transported from place to place, have been loaned from time to time to the schools. They were especially

useful when used in connection with the vacation schools which were held during the summer months, and we received directly from teachers and indirectly through the press repeated assurances of the great value of these collections to those who were engaged in instructing the young. . . . Just as the traveling library has proved itself useful, so the traveling collections of scientific objects may be useful in the work of the schools."

In 1904 we find this additional advantage of the collections noted:

"Circulating collections have been prepared in addition to those reported in previous annual reports and are in considerable demand by teachers in the various schools, not only of the cities of Pittsburgh and Allegheny, but the adjacent boroughs. These small collections carry the instruction which the Museum is intended to furnish to many at a distance—persons who, having had their appetites whetted for further knowledge, make it a point to resort to the central institution. We thus

establish relations of interest with the pupils in the public schools and private academies of western Pennsylvania."

And, in 1905, the Director says: "Our circulating collections are in constant demand in both public and private schools. We are pleased to observe that the compliment of imitation is being paid us by a number of other museums not only in America, but in the old world, and the attention of the Director of the Museum has been



AN INDUSTRIAL CASE

Showing corn with its products and by-products.



## A MISCELLANY OF THE SMALLER LOAN ARTICLES

Showing the Riker mounts and the study skins enclosed in glass cases and fiber tubes.

called to a number of publications which have appeared in European countries citing the example of the Carnegie Museum as worthy of imitation, and advocating the employment of this system universally."

From that day to this, however, there has been a great expansion in the number and kind of cases available in the loan collection. Going back just fifteen years ago, when Reinhold L. Fricke took charge of their preparation, we find that there has been a large multiplication of the traveling cases and a constant growth in the number of persons who study them. The 50,000 persons in the public schools who viewed these collections fifteen years ago have increased to more than 300,000 today, and there are now more than 650 cases containing 5,600 specimens from which they may acquire a knowledge of the science of nature.

There are now ten sizes of cases and various types of exhibits in them. Some of them are made up of only a single specimen of a bird or a mammal; others, to give a more complete picture, contain life-size habitat groups. In the habitats a colored photographic background, enlarged to fit the case, shows the environment of the mounted specimens, with the male, female, and young animal of the species. Formerly it was the practice to use painted scenes, but the present innovation of colored photographs makes a very realistic

setting and gives a completely detailed picture by showing exactly where the specimen lives in the out-of-doors.

Not only are there cases of western Pennsylvania birds and mammals, but also local insects—both harmful and helpful—are included among the loan material. The insects are placed on Riker mounts—beds of cotton in a sealed glass case—and all the specimens are labelled with both the common and scientific names.

Industrial cases of cotton, wool, silk, coffee, corn, oil, coal, cork, sugar beet, and various other important industries meet the needs of the teacher and lecturer in that field. These large cases show the original raw product, the finished product, and by-products and uses. The history exhibits, consisting of American Indian, Eskimo, South American, Chinese, and Japanese material, are used extensively in the classroom.

In addition to the two foregoing collections of city public school and county cases, the section of education also has 707 study skins for loan to schools and interested organizations of the city, county, and state. These exhibits—637 birds and 70 mammals—are enclosed in glass cases and protected with fiber tubes for quick and easy transportation. These educational aids have the advantage of closer visual inspection by the individual student, for they are labelled and wired for handling. There is a fairly complete collection of

small local specimens which may be examined seasonally, just when they may be seen by the boys and girls and nature students in the fields and forests near their own homes. The glass tubes protect these small animals; the larger bird and mammal skins are specially prepared to withstand handling, but are not glass enclosed. Here, too, new specimens are being added constantly.

These traveling cases show just another way in which the Carnegie Institute puts its vast resources at the command of the people of Pittsburgh. The education of the children and the enlightenment of the men and women of the larger community who come in touch with its extending arms give constant witness of its energetic life.

## LIBRARY PHOTOSTAT SERVICE

**A** SELF-SUSTAINING, non-competitive, non-profitable photostat service is maintained by the Carnegie Library of Pittsburgh for the benefit of those readers both here in Pittsburgh and from far-distant points who wish copies of records or facts in reference and technical books available only in the Carnegie Library collection. The Library receives orders for over five thousand such photostatic reproductions each year. About four-fifths of these are for copies of United States and foreign patents and articles from technical periodicals. The records show that there are sixty-seven companies and individuals who order them quite regularly. The list includes patent attorneys, engineers, research laboratories, and industries of all kinds; with a few notable exceptions, it includes the principal industries of the Pittsburgh district, among them the Allegheny Ludlum Steel Corporation, Aluminum Company of America, American Cyanamid & Chemical Corporation, Bell Telephone Company, Bethlehem Steel Company, Blaw-Knox Company, Carnegie-Illinois Steel Corporation, Gulf Research & Develop-

ment Company, Harbison-Walker Refractories Company, Jones and Laughlin Steel Corporation, The Koppers Company, Mine Safety Appliance Company, National Tube Company, Pittsburgh Plate Glass Company, Standard Steel Spring Company, Union Switch & Signal Company, Vanadium Corporation of America, Weirton Steel Company, West Penn Power Company, Westinghouse Air Brake Company, and Westinghouse Electric & Manufacturing Company. Others can be added at will.

## RECENT PUBLICATIONS OF THE CARNEGIE MUSEUM

### ANNALS, VOL. XXVIII

ART. 1—"Notes on Amphibians from Rockingham County, Virginia," by M. Graham Netting, Curator, Section of Herpetology, and L. Wayne Wilson, Mathias, West Virginia. Price: 10 cents.

Among other species listed in this paper is the spadefoot toad, which is reported for the first time from the Shenandoah Valley.

ART. 2—"New Silurian *Scolecodonts* from the Albion Beds of the Niagara Gorge, New York," by E. R. Eller, Assistant in the Section of Invertebrate Paleontology. Price: 50 cents. Illustrated.

This paper is devoted to a new discovery by Mr. Eller of fossil marine worm jaws from an early geologic age.

ART. 3—"Pleistocene Fossils from the Belcher Islands in Hudson Bay," by Horace G. Richards, New Jersey State Museum, Trenton. Price: 10 cents.

The fossils that have been reported here are marine shells that were collected on an expedition to the Belcher Islands in 1939.

ART. 4—"Geographical Distribution of the Recent Mollusca of Newfoundland," by Stanley Truman Brooks and Betty Watt Brooks, Section of Invertebrate Zoology. Price: 20 cents.

The final report covering the snail and mussel collections made by Dr. and Mrs. Brooks between 1934 and 1938 upon the island of Newfoundland is included in this summary.

ART. 5—"Notes on the Reproduction of the Northern Copperhead, *Agkistrodon mokasen cupreus* (Rafinesque) in Pennsylvania," by Albert G. Smith, Graduate Student, University of Pittsburgh. Price: 10 cents.

From a study of twenty cases, conclusions are reached on number of young and dates most probable for birth.

## THE CARNEGIE-WESTINGHOUSE SCHOLARSHIP PLAN

By DOUGLAS F. MINER

*George Westinghouse Professor of Engineering, Carnegie  
Institute of Technology*

THREE years ago the Carnegie Institute of Technology completed an agreement with the Westinghouse Electric and Manufacturing Company for the inauguration of a novel form of co-operative engineering training. The program, as it was described in THE CARNEGIE MAGAZINE for September 1938, was as follows:

The Westinghouse Company presented Carnegie Tech with a gift of \$200,000 for establishing the George Westinghouse Professorship, and undertook to finance ten five-year undergraduate scholarships each year, making a total of fifty scholarships in effect after the plan is in full operation. Each scholarship carries a Westinghouse grant of \$50 a month for the five-year period and certain added compensation during the latter part of the program, making a total of \$3,420 given to each scholar.

Early each year announcement of the scholarships is made through Westinghouse offices all over the United States. The process of selection of ten boys from the hundreds of applicants starts with a comparison of high-school records, with considerable attention to par-

ticipation in student activities and outside interests. In the application the boy is asked to describe some technical device as an indication of his aptitude in engineering subjects. About one

hundred and fifty of the most promising candidates are selected for a mental aptitude test; and the final selection is made after letters of recommendation have been considered, and each candidate has had a personal interview. Other factors being equal, some effort is directed toward obtaining geographical distribution. For Carnegie Tech this process of selection has secured, in addition to the Westinghouse scholars, many of the higher types of

students who, while they were not chosen for a Westinghouse scholarship, were sufficiently interested in Carnegie Tech to come here and are excellent additions to the student body of the College of Engineering.

There have been many forms of co-operative courses in this country, the more common involving the alternate system in which two students are paired, one working in industry while the other is in school, with the students interchanged periodically. The novel



DOUGLAS F. MINER

and advantageous features of the Carnegie-Westinghouse scholarships are that each student pursues the course and work that he desires, independent of the others; the school work is taken in the normal class schedules without frequent interruption; and the practical experience is integrated through diversified experiences in a single corporation.

One full year's continuous experience is obtained by leaving school in the middle of the junior year and returning one year later to finish the remaining one and one-half years. Four summer periods of three months, commencing directly after high-school graduation, bring the total up to two years of factory training, obtained in addition to a full engineering training leading to a Bachelor of Science degree in an elapsed time of five years.

It is pertinent to ask, after three years have passed, what conclusions can be drawn as to the virtue of the program and what indications of success can be detected. Scientific caution would probably require that judgment be withheld until long after the first group of scholars had graduated, say perhaps not until after fifteen years from the start of the plan. When we know how large a percentage of the boys reach positions of responsibility in their chosen work and in civic life, we can say the program helped or did not help to attain this end. Life is full of situations, however, in which we cannot await a final result before determining whether our course of action is correct. We must find some means of judging as we go along. We cannot tell whether a house will be a wholly satisfying home until it is finished and lived in, but we can mark the progress of construction and obtain a reasonable judgment of its size, strength, and fitness for the intended purpose. In building a large machine, such as a turbine-generator, we cannot be sure it will work perfectly until it is built and installed. We can determine and predict a successful outcome, however, by in-

termediate tests, applied as the job proceeds. If the dimensions are correct; if the materials are properly selected, inspected, and fabricated; if the separate parts are examined, gauged, and tested; then we have reasonable assurance that the assembled apparatus will perform well. Perhaps it is more difficult to devise methods of measuring human attributes, but certain evidences of accomplishment have proved to be rather reliable in forecasting the chances of success of students.

The correlation established between college grades, for example, and subsequent progress is encouragingly good. The factor system of grading at Carnegie Tech uses 4.00 as a perfect rating, corresponding to an A in some systems, 3.00 corresponds to a B, and so on. A factor of 1.50 is necessary for graduation, and the average factor of all freshmen over the last three years has been 1.94, or practically a C in the alphabetical scheme. In the light of this explanation, we can interpret the following record of Westinghouse scholars as being exceptional.

#### 1938 group

First year average.....	2.85
Second year average.....	2.81

#### 1939 group

First year average.....	3.44
Second year average.....	3.29

#### 1940 group

First year average.....	3.19
-------------------------	------

At the midyear period in this last school year, seventeen out of the three groups made the honor roll, requiring a factor of 3.15, which is attained by less than ten per cent of the students in the Engineering College.

The industrial assignments during the summers have covered three general types of work: laboratories, engineering offices, and factory offices. Several students have had interesting experiences in the research and other laboratories. One worked on the famous atom-smasher, helping to make adjustments and measurements during its assembly.



OFFICIALS OF WESTINGHOUSE AND CARNEGIE TECH WITH FRESHMAN AND SOPHOMORE HOLDERS OF WESTINGHOUSE SCHOLARSHIPS AT TECH

FRONT ROW: D. F. Miner, Tech; E. B. Roberts, Westinghouse; R. E. Doherty, Tech; A. W. Robertson, Westinghouse; W. R. Work, Tech.  
SECOND ROW: William Carter, Wallace Carpenter, Robert Dixon, Charles Greening, James Voelz, and Leslie Frost.  
THIRD ROW: DeWitt Lyon, Harold Schweinler, Milford Tassler, Sydney Hagerling, and Samuel Brister.  
TOP ROW: John Wolff, Harold Dickson, David Johnson, Edson Tennyson, Roger Loper, and John Horth.

The job ranged from setting up electronic measuring circuits for counting electrons to cleaning soot out of the tank after an accidental fire occurred in some insulation. Although the metallurgical knowledge of a high-school student is obviously limited, one boy, the summer before he entered Carnegie Tech, found himself preparing single metal crystals half as long as your finger. Measuring the electrical properties of new organic compounds had one boy in work a little over his depth, but after he returned to school the principles of physics and chemistry took on new meanings. The uses to which analytical chemistry can be put in the inspection of incoming raw materials occupied the time of a young chemical engineering student. Another job was to follow through the trial of a new insulated wire in the shop and to see what troubles came.

Some of the management students have helped study costs of manufacturing. Among their research questions are the following: What are the parts of which a device is made, and how

much does each operation cost? Is there a means of eliminating a machining operation, or can two parts be fastened at one operation? Another factory job was finding possible applications for newly discovered or developed methods. A new type of brazed joint was thought to be excellent for making tips for contactors. Would it be satisfactory and save money?

Students in the engineering design offices have acted as messengers, going all over the shop for drawings, correspondence, or information. Some have had experience in drafting. Others, working with drawings, learned how they are made and used, and how the necessary clerical system of numbers on drawings functions. Translating experimental data on new designs into quickly comprehended curves helped another student to learn the language of expressing engineering facts. Some design experience included the calculation of critical speeds of machines, using some of the short-cut methods that have been evolved. Estimating the weight of machine parts from the drawing



## THE CARNEGIE MAGAZINE

proved to be another interesting job.

Another barometer of value is the development of personality resulting from participation in student activities. Evidence has been presented again and again that personality deficiencies are at the bottom of more failures than lack of technical ability. If we have both technical proficiency and satisfactory social adjustment in the same man, the combination is insurance for a well-rounded professional career. A survey of the first three groups shows the diversity of interests by active participation:

Activity	Number of men
Class or dormitory officers.....	6
Fraternity activities.....	10
Y. M. C. A. cabinet.....	10
Student publications.....	21
Musical organizations.....	8
Dramatics.....	2
Debating.....	3
Athletics.....	27
Miscellaneous clubs.....	12

The boys in the first three groups are well distributed among the engineering courses offered at Carnegie Tech, as follows:

Chemical Engineering.....	5
Electrical Engineering.....	8
Management Engineering.....	5
Mechanical Engineering.....	8
Metallurgical Engineering.....	2
Physics.....	2
	30

They represent ten states widely scattered over the country—California, Georgia, Minnesota, Montana, Ohio, Pennsylvania, Tennessee, Texas, Washington, and Wisconsin.

The selection of ten new scholars for 1941 has just been announced as a result of a competition among 495 applicants. They, too, come from many geographical sections, adding four more states—New Mexico, Nebraska, the District of Columbia, and Illinois.

The first class is now working at Westinghouse plants on the full year

away from school. They are accumulating useful acquaintance with industry in shop, office, and laboratory. Of the ten, three are in laboratories, three in engineering design, one in time-study work, one in inspection, and one in plant layout activity. A given assignment continues for three to four months. A check-up shows that the boys are giving such a good account of themselves that requests have been made for them to come back to specific jobs when their training is finished. In other words they have "sold" themselves, a lesson we all have to learn in order to fit into the industrial scene.

We may conclude from the "in-process" gauges and tests applied, that the Carnegie-Westinghouse Scholarship Plan so far meets the hopes and expectations of those who conceived the program.

## FINE ARTS FREE LECTURES

ACCORDING to the custom of former years, the Carnegie Institute will present a series of lectures during October and November in connection with the exhibition, "Directions in American Painting." Five of the lectures will be given on successive Tuesday evenings, beginning October 28, in the Carnegie Music Hall at 8:15 P.M., and there will also be several Sunday afternoon talks in the Lecture Hall. The speakers will include such well-known critics and museum directors as William M. Milliken, Director, The Cleveland Museum of Art—who will give the opening lecture; Oskar Hagen, Chairman of the Department of History and Criticism of Art, University of Wisconsin; Dudley Crafts Watson, Extension Lecturer, The Art Institute of Chicago; and Elmer A. Stephan, Director of Art, Pittsburgh Public Schools. A complete lecture schedule will be published in THE CARNEGIE MAGAZINE for October.

### A FREE PRESS

Where the press is free, and every man able to read, all is safe.

—THOMAS JEFFERSON



## THE GARDEN OF GOLD



CAN anyone who has never felt the experience know what it is like to open a letter that brings the gift of large financial support to something in which he is vitally interested? That was the Gardener's good fortune the other day when it was announced to him that Charles Gulentz had bequeathed \$100,000 to the Carnegie Institute of Technology for its endowment fund. Now, the gift was in itself an extraordinary favor; but when it comes to hand under the arrangement with the Carnegie Corporation of New York whereby, if we will raise \$4,000,000, they will give us \$8,000,000, it will be seen that Mr. Gulentz' generous remembrance immediately assumes a value of \$300,000. Until Carnegie Tech completes this growing fund of \$4,000,000, it will be in anyone's power to use an Aladdin's lamp, and by rubbing it with a dollar produce three dollars, and go clear up the scale until, if he wants to, he gives a million dollars and produces three million dollars.

Mr. Gulentz was a citizen of Pittsburgh, where he followed his professional work, and where he was born, married, and lies buried beside his wife and his mother in Homewood Cemetery. Upon leaving Georgetown University, he studied law and practiced at the bar; he was also interested in business, and acquired a moderate fortune, out of which comes this fine remembrance to Carnegie Tech. He lived on Bellefield Avenue, and this nearness to the Carnegie Institute, together with his constant reading of *THE CARNEGIE MAGAZINE*, gave him a familiar acquaintance with Mr. Carnegie's cultural creations that finally won him to make a quiet bequest, unknown to those who were to receive it, with the instruction that the income shall be used to supply scholarships to deserving boys and girls who are striv-

ing for an education. Mr. Gulentz has planted fruit in the Garden of Gold that will enrich every life that tastes it, and the harvest will always be there to nourish the youth of our community from year to year.

This gift from Mr. Gulentz has encouraged the Gardener to arrange with the Editor to print in each number of *THE CARNEGIE MAGAZINE* the wording that can be used by other friends in making similar gifts by bequest, either large or small. It is hoped that many friends will avail themselves of this method of leaving money where it is sure to do good, both to the students and to the community.

Here is another matter that has gratified the Gardener. J. Kenneth Dourt, curator of the section of mammalogy, Carnegie Museum, has arranged a journey of exploration to British Columbia in search of big game, such as caribou, grizzly, and the big brown bear, intended to enlarge the Museum's collection. A friend who wishes to remain anonymous made a gift of \$500 toward the cost of the expedition—another proof of how people unexpectedly take part in the development of these institutions, and how greatly their attentions are appreciated by those in charge.

Then, we wish to announce the gift of \$200 from Gustave H. Kann, of Pittsburgh, who is making this sum the first payment on a total amount of \$1,000 which he is contributing to the 1946 Endowment Fund in memory of Mrs. Kann's mother, Mrs. Julie L. Solomon. The money is for the use of the student loan fund and will come under the three-for-one arrangement, so that in 1946 Mr. Kann's memorial will be worth three times his gift, or \$3,000.

Since the publication of *THE CARNEGIE MAGAZINE* in June there have been many additions to the 1946 En-

## THE CARNEGIE MAGAZINE

dowment Fund of the Carnegie Institute of Technology by the alumni and friends. From month to month we will publish the names of as many of these donors as space will allow, eventually reaching each alumnus who has contributed. Here are a few of the many contributors to the spring fund, showing the anxiety of our alumni body to contribute to this endowment fund up to the very limit of their resources:

First, the sum of \$86 was given by Irene S. Bibza, Mrs. Rex Corns, James W. Early, William C. Fox, Grace L. Hershberger, Edward C. Linn, R. H. Marshall, Carl McVicker, Mrs. E. G. Oppenheimer, Dorothy Pritchard, Frank P. Thomas, Bernice K. Thorpe, E. F. Weiss, and Frances L. Zahrobsky.

There is also a gift totalling \$207 from Olive F. Bragdon, Charles F. Bruno, Michael Dufinez Jr., S. F. Eannarino, David G. Edwards, Olga Goidics, Mrs. E. Donald Hayes, I. H. Lundgren, Paul C. McKenzie, Elizabeth Moore, Coleman Murphy Jr., W. Earle Otis, John Sayles, Louise Schneider, Livonia C. Stevenson, Peter Strategos, and Nora Willetts.

The following alumni have made gifts to the 1946 Endowment Fund of \$177: Jane Arnold, Mrs. T. G. Arnold, Helen H. Bencker, Eleanor Bright, Mrs. C. C. Brinton, Frances Bryant, Charles E. Crede, Keith R. Cunningham, Robert K. Ducey, S. David FitzGibbon, Fred C. Ford, John F. Hotchkiss, Elmer L. Jarrett, Dorothy Kendall, Anna E. Ladd, Richard J. Latta, J. B. McMahon, John B. McMahon, Alfred A. Nickel, E. A. Normandeau, Mrs. J. Vick O'Brien, Arnold Perreton, Eleanor A. Reich, Harriet Stone, William Van Triest, and Mrs. Edwin Wallover.

And Anthony J. Kerin, an alumnus who sends his contribution to the Alumni Fund for 1946 regularly, has sent in \$20 since THE CARNEGIE MAGAZINE was published in June.

A gift amounting to the sum of \$291 has been sent in to the Alumni Federation by the following: Mary Cincsar Blankenship, Ina Conner Campbell,

J. C. Cochrane, William M. Danner, Carl M. Dozer, Mary S. Dunnells, Abe S. Eisen, D. Jean Fire, Elizabeth Graf, Mrs. Stanton Hertz, Enos M. Johnston, Marion T. Jones, H. W. Kachel, Leonard E. Link, John F. Luther, Anna Loomis McCandless, Parks W. Miller, William H. Nichols, Alfred J. A. Peterson, William J. Phillips, Mrs. H. E. Robertson, John L. Ross, J. B. Sprague, John C. Stauffer, O. J. Swanson, Richard E. Townsend, and Miriam A. Weikert.

Adding the cash gifts acknowledged this month to the total sums recorded in the Garden of Gold in THE CARNEGIE MAGAZINE for June 1941, brings the total of cash gifts contributed for the work of the Carnegie institutions since the first issue of the Magazine in April 1927 to the following amounts: for the Carnegie Institute, \$1,314,322.95; for the Carnegie Library of Pittsburgh, \$40,629.12; and for the Carnegie Institute of Technology, \$230,745.68 for operation and equipment, and \$1,609,254.32 for its 1946 Endowment Fund—which will multiply under the two-for-one arrangement with the Carnegie Corporation of New York; making a grand total of \$3,194,952.07 for the three institutions. There is still the sum of \$2,390,745.68 to be raised before 1946 for the endowment fund agreement.

## FREE ORGAN RECITALS

**D**R. MARSHALL BIDWELL, Organist and Director of Music at the Carnegie Music Hall, has announced that the regular series of free organ recitals, held each Saturday evening and Sunday afternoon from October through June, will be inaugurated on October 4 in the Music Hall at 8:15 P.M., and on October 5 at 4:00 P.M. This season will mark the forty-second year that the great Music Hall organ has given the people of Pittsburgh the best music that has come down to us through the ages.

## MUSEUM SUMMER RESEARCH

**S**UMMER to the staff of the Carnegie Museum means projects for outdoor work, with long days in the field collecting, revising, and adding to the specimens made more available by the winter's work indoors of identification and research. This summer the staff scattered far and wide over the continent of North America, and with their return they bring a new impetus to their laboratory routines by the broadening of scientific knowledge acquired in their travels.

W. E. Clyde Todd, curator of the section of ornithology, has returned from James Bay in Canada, where his former expeditions were amplified with new specimens and with more detailed collecting. Arthur C. Twomey, assistant curator in the same section, left Pittsburgh on April 9 for Arizona, where he first studied certain regions that were not sufficiently explored during his stay there last summer. From Arizona he proceeded to Oregon and Washington for a stay of five months, with promises of some fruitful results.

The paleontological work this year was divided into two field parties, led by J. LeRoy Kay, curator of vertebrate paleontology, and John Clark, assistant in the same section. They worked for a time separately and later together. The project included studies in southern Wyoming, eastern Utah, northwestern Colorado, South Dakota, and southwestern Montana. The exploration, incidentally, followed some promising reconnaissance in the area that was conducted last summer by Mr. Kay, when he discovered evidence of fossils in several new localities. Research was carried on in the Triassic, Permian, Eocene, and Oligocene formations, and desirable new exhibition material was secured for the paleontological gallery. In Mr. Kay's party was Gordon Kutchka MacMillan, assistant in the section of invertebrate zoology, who

specialized in collecting shells for his section from the Uinta Basin and other sections. William Wallace also joined the party to collect mammals from the western part of Colorado and eastern Utah for the section of mammalogy.

J. Kenneth Doutr, curator of the section of mammalogy, left Pittsburgh in August with Lawrence C. Woods Jr. for a hunting expedition in British Columbia. They are primarily after big game such as caribou, grizzly and big brown bear, to further enrich the mammalogy exhibits in the Museum.

Dr. and Mrs. Stanley T. Brooks added new specimens to the section of invertebrate zoology this summer from the southern states—namely, North and South Carolina and Virginia.

In the field of invertebrate paleontology, research was carried on by E. R. Eller, assistant curator of the section, who received a grant from the Geological Society of America for four months' work in the Manitoulin Dolomite Silurian Age from Niagara Gorge to Manitoulin Island in Lake Huron. Beds of fossils were mapped and fauna collected and studied all through this section of upper New York State and Canada.

The section of entomology was represented in the field by George Wallace, assistant curator, who collected on Presque Isle for a few weeks. The section of herpetology and the section of botany made additions to their collections by expeditions through western Pennsylvania. Ottmar F. von Fuehrer, Carnegie Museum staff artist, spent several weeks in Arizona in order to see the desert in full bloom in preparation for the restoration of the desert group in the new Botanical Hall, which will soon be open to the public. Mr. von Fuehrer sketched, painted, and photographed the cacti in their native habitat and colors, in anticipation of a truly vivid new group.

## S. GILLES DU GARD

*A Glorious Example of Romanesque Art*

By DOROTHY NUTTALL

WHEN the Carnegie Institute assembled the collection of architectural examples for the Hall of Architecture, it was found that most of the objects could be copied and obtained from the galleries of other museums, either in this country or abroad; but there was one piece that the Institute chose for itself—the façade of the church of St. Gilles, at Gard, France—and a replica of the entire monumental west front was made on the spot and now stands as the most commanding and the most beautiful piece in a hall whose objects, taken together, form a comprehensive chapter in architecture from the most ancient relic extant to the end of the Italian Renaissance.

Romanesque art is the most composite of all the arts, because in its luxurious wealth of carving it portrays the imagination grasping at the pagan temples of Gaul, the sarcophagi of the early Christian centuries, far-away works of Asiatic antiquity, Mohammedan objects of art, and Persian, Byzantine, and Arabian fabrics, using all these sources to provide for the churches of France an infinite variety of decoration that was un-

common, fanciful, and mysterious.

Standing at a height of thirty-eight feet and measuring eighty-seven feet and three inches in width, the replica, with its dark stone triple portals, is a sort of sepia in coloring and weather-beaten with such perfect simulation that visitors have been led to believe that it is the original. The cast is the only reproduction in the United States of the entire façade of this abbey church—the most famous and distinguished example extant of the medieval school of Provence architecture—and is easily one of the most interesting and imposing examples in the Institute.

In its general lines, the composition is based on some Roman triumphal arch, or portico, or gateway, while the figured portions of the sculpture—preeminently the portraits of the Apostles—undoubtedly have their origin in Roman sarcophagi. The Corinthian columns, with their characteristic acanthus leaves, are also noteworthy from the historical point of view, for they show that the medieval builders cut down and adopted genuine columns from some ancient building, belonging to the Gallo-



MAIN DOORWAY OF S. GILLES DU GARD





THE FACADE OF S. GILLES DU GARD

Roman period of history and architecture. The close following of the older forms is shown, also, in some of the minor ornaments, such as the dentil and heart-and-dart, which were obviously borrowed and are typical of Provençal Romanesque of the time.

To the student of architectural forms it is not surprising that this influence should prove particularly strong in a country strewn with Roman remains, nor is it strange that the forms should owe something, too, to the Persian and Byzantine arts which were carried westward along the great trade routes and could not fail to be noticed in this land of Provence, so near the Mediterranean Sea. Fortunately the foreign inspirations are all happy ones, and the whole effect of the St. Gilles front is so harmonious and rich that French Romanesque architecture and sculpture could have no more splendid representation than is shown by the portals of this church of the hermit saint of the hind.

As the story goes, one Egidius or Gilles was born at Athens, reputedly of royal blood, about the middle of the

seventh century. Passing over into Gaul, he spent two years on the River Gard, probably performing various miracles, chiefly of a healing nature. He then went out alone into the wilderness surrounding the present town of St. Gilles. There, living in simple solitary hermit fashion on herbs and the milk of a lily-white hind which came to him from time to time and which he protected, the anchorite was discovered one day by Wamba, a Gothic king, while riding with his hunters.

They had been following a white doe, apparently miraculously protected by some means from the hounds, and when it escaped into a grotto, the huntsmen shot an arrow in after it. On entering, Wamba and his men found the doe in the arms of a grand old man, white-haired and sweet of countenance, the arrow in his shoulder. After the king had dressed the slight wound, he was so touched by the simple life the saint was living that he never forgot him, and returned many times for rest and communion with him. The story of this incident got about, as such things did in those days of infinite faith, and



Gilles built up a high reputation for humility and sanctity and the performing of miracles. His renown spread so far that this eremite in the wilderness, whose symbol has ever since been the hind he defended, eventually took to himself some disciples and yielded to the king's desire to erect an abbey for their home on the site of the now-famed grotto. Gilles died there and was canonized in the ninth century, and his celebrated and powerful monastery became one of the great pilgrim shrines of the Middle Ages, and was in due time surrounded by a town that took its name from that of the saint who founded it. Raymond IV of Toulouse established the first priory in Europe of the Knights of St. John there and began the abbey church.

When the crypt of St. Gilles was begun in 1116, the church was planned to cover much of the holy ground on which the hermit had taught his followers. But this plan had to be abandoned in 1119, owing to constant religious and political disorders, lack of funds, and, possibly, a decline of the original fervor. Construction was resumed at intervals, but records show that only the crypt was nearing completion by 1140, and it is difficult to know just when the nave was finished or to determine the dates of the façade and choir. In the sixteenth century the Huguenots used the church as a citadel, then ordered it razed, and left it in ruins. The effort to restore it in the seventeenth and eighteenth centuries was only partial and not very successful, the arcades of the

nave having been too clumsily rebuilt, and the choir having been nearly all taken down and carted away during the French Revolution.

Despite all this ill-treatment due to the malevolence of time and man, the façade is still a most noble and varied ensemble, the earliest, as well as the finest and most elaborate, instance of that union of three great doorways into a single glorious composition that is so marked a feature of the famous French-Gothic west fronts that came with the thirteenth century.

Consisting of a large central doorway flanked by two lateral doorways of lesser size, and united by a cornice covered from end to end by a long frieze, the façade is set off to great advantage by a flight of steps running the whole width of the center portal, and by side portals so designed that they add immeasurably to its dignity. Each door is deeply recessed with a tympanum framed by a series of slender archivolts—that is, by the molding or other ornaments surrounding the curved openings on the wall face. Columns support the cornice; niches over the colonnade, divided by fluted pilasters ornamented

with bands of large-leaf scroll work, hold serried rows of statues of the Apostles; and a second frieze runs along the wall of the colonnade above the heads of the statues. The decoration is alive with true and mystic beasts and monsters; some columns of the portal rest on couchant lions—a form of decoration clearly imported from Lombardy—and the central pilaster is surmounted by



ST. JAMES AND ST. PAUL GUARD  
THE MAIN PORTAL

eagles. The frieze is bordered at the lower edge by all sorts of small animals, and the embrasures are formed by a base covered with bas-reliefs inscribed in circular medallions, one showing an archer shooting a stag, another portraying a lion hunt, while the bases of the columns present chimerical animals and scenes from the chase.

The age-old symbolism that has come down to us and to present-day art is easily evident in these portrayals of animals. From the three stone symbol-figures in the small niches on either side of the center doorway, we may interpret the rise of humanity: above all is the figure of man, who bestrides the lion, the king of beasts, who is over the goat, representing the lowest form of animal life. The mightiness of truth, typified by the church, crushing out evil and atheism, is depicted in the many small figures on which the lion as a figure of strength is prone. The church played such a dominant part in the lives of men during the Middle Ages that any number of symbols may have represented its power.

St. Gilles undoubtedly belongs to the period when Romance sculpture as well

as architecture had attained a high degree of development. The niche statues of the Apostles, for instance, give this Provençal church a goodly part of the beauty for which it has been so famous. And the fact that only the outer and upper friezes bear figures make the lower and inner ones more soft and gentle in their beautiful foliation.

The statues may be divided into three groups, all of different dates. Even though confined to but two friezes, they are numerous, there being six on each side of the center door, two in the recess, and four facing the front.

In the first group, around the main portal, are the statues of the twelve Apostles, with two figures of angels overthrowing demons at the extreme ends of the façade. These statues, all of the same merit, are possibly all by the same hand, or at least from the same atelier. They were certainly executed in the same epoch.

Beginning on the extreme left, the first figure to the right of the north door is St. Jude, holding a book. Then comes Bartholomew with a scroll; St. Thomas, whose legs are crossed; then St. James Minor—or the Less—in a bishop's dress and holding a chalice. The next four figures decorate the uprights of the main door, facing each other, two by two, and with their feet upon lions that in their original condition must have been splendidly lifelike. They are St. John the Evangelist, holding a book; St. Peter with the keys; St. James again, opposite St. John, with a book; and St. Paul, opposite St. Peter, holding a phylactery. St. Peter here is the true Byzantine prince of the church, in a rich mantle with an embroidered and studded border. The inscription on St. James's book has been partly destroyed, but there is enough left on the disc to show that it is the seventeenth verse from the first chapter of his Epistle beginning, "Omne datum optimum. . ." or "Every good gift and every perfect gift is from above, and cometh down from the father of lights. . ."

The four remaining statues come be-



DETAIL BETWEEN THE MAIN PORTAL  
AND THE SOUTH DOOR

tween the main portal and the south door and are inferior in execution. Although the names of St. Simon the Canaanite, St. Philip, St. Matthew, and St. Andrew have been hazarded for them by several writers, any inscription or attribution on the books and phylacteries the saints are carrying does not permit them to be definitely identified.

The frieze inscribed above the statues of the Apostles and on the lintel of the center door forms a second group of sculptures of later date and later execution. It unfolds a continuous story, illustrating the closing scenes of the Saviour's life. Beginning on the left, we have successively: Judas receiving and bringing back the thirty pieces of silver; Jesus turning the money-changers out of the temple; Mary and Martha prostrate at His feet; the resurrection of Lazarus; and the denial of St. Peter. Over the central door we have the two scenes of the washing of the feet and the Last Supper. Then to the right follow the kiss of Judas; Christ before Pilate; the flagellation; and the carrying of the Cross. This great bas-relief is bordered, at the lower edge, by a band ornamented with human heads and animal figures in high relief upon the bare face of the stone, and is supported by isolated columns, some smooth and some ribbed by capitals of acanthus leaves and small figures.

The tympana, or recesses, of the doors form the third group of sculptures. Those of the central door were unhappily destroyed, and it is filled today by a modern work representing Christ surrounded by the symbols of the Four Evangelists, which poorly reproduces the original. The two side doors, however, have a great unity of aspect—archivolts, tympanum, lintel, and jambs are all perfectly harmonized. The left-hand tympanum represents the Adoration of the Magi, and the lintel the Entry of Christ into Jerusalem. Christ on the Cross, surrounded by the Virgin Mary, St. John, the Church and the Synagogues, fills the right-hand one. On the lintel we see the holy women first

buying perfumes, and then at the Tomb.

This work, so fine and beautiful in quality, is hardly characteristic of the twelfth century, but several critics think that, during the first years, and certainly in 1116, of the Romanesque period, the blossoming began that was to flower into the sculptures that make St. Gilles one of the show places of Provence. And, although the school to which it belongs is less powerful and original than some of its fellows, St. Gilles, with its Apostles and frieze, together with the nobility of its range and the audacity of its conception, ranks today among the greatest artistic treasures of France.

## CONTEMPORARY PRINTMAKING

CONCURRENT with the exhibition, *Directions in American Painting*, the Carnegie Institute will present a *Survey of Contemporary Printmaking in the United States*. This exhibition, which has been assembled by the American National Committee of Engraving, will consist of 110 prints by as many artists. So far as possible, each artist will be represented by a work that embodies his best contribution to contemporary printmaking, one that epitomizes his individual viewpoint and style. Including all phases of the art of making prints, the show will cover the range of outlook characteristic of national accomplishment in this field.

There will be included prints by John Taylor Arms, Peggy Bacon, Gifford Beal, Frank W. Benson, Isabel Bishop, Louise Boyer, Paul Cadmus, Asa Cheffetz, Stuart Davis, Adolf Dehn, Kerr Eby, Wanda Gag, Arthur W. Heintzelman, Edward Hopper, Peter Hurd, Joe Jones, Norman Kent, Rockwell Kent, J. J. Lankes, Charles Locke, Luigi Lucioni, Martin Lewis, Reginald Marsh, John J. A. Murphy, Boardman Robinson, John Sloan, Harry Sternberg, Mahonri Young, and many others.



## "THE PLAY'S THE THING"

### *Tragedy in Greece*



**A**CTING had become a recognized profession in Greece before the fifth century B.C., but it was at this time, with the coming of the masters of Greek tragedy, that the Greek theater really came into its fullest flowering.

It all began more than a century before, with a simple goat chorus, or group of rustic singers, untrained and dressed in goat skins for the worship of Dionysus, the god of the groves and the fields and of fertility and the giver of the grape and its wine. To this youngest of the Olympians was the Greek drama consecrated, for the plays themselves grew out of the Dionysian celebrations—out of the rites, dances, songs, and parades in the god's honor.

These festive satyr-singers, not at first of any particular number, sang rude chorals in praise of their god at vintage festivals in the winter and early spring. The comedies may be traced back to the winter feast, but it is to the spring festivals that tragic drama goes back—to that day in March when the country people met together to open the casks of new wine and to welcome with various rejoicings the renewed fertility of nature. On such occasions they were accustomed to celebrate the praises of their benefactor with a kind of hymn called the dithyramb; and from this hymn Greek tragedy is descended.

The dithyramb belonged to that type of performance that is called a choral dance; in other words, it was a hymn chanted by a chorus, and accompanied by illustrative gestures and motions. Its object was to describe in song various episodes and adventures in the life of Dionysus, and at the same time to present these episodes in a concrete form by means of expressive

mimicry and pantomime. These singers disguised themselves as satyrs, or companions of Dionysus, to make the presentation more lively and picturesque, and for that reason they were called goat choruses. It was with this rude group that the founder of Attic tragedy—Thespis—began the work, about 560 B.C., that was to lay the foundation for the later Greek masters of tragedy.

Thespis may be called, in a way, more than the founder of Attic tragedy, for he has given us with his name the word Thespians, which characterizes the theater group to a greater extent than any other name. When, during his early productive years, the group of satyrs became more mimetic, Thespis first conceived the notion of improving the structure of the dithyramb. His innovation, though vital and far-reaching in its results, will seem very simple to the modern play-goer. He introduced an actor into the festivals by detaching one member of the goat chorus to play the lead part in his uncouth pieces. The object of employing this additional performer was to give greater prominence and effect to the interludes, or spoken conversations, with which the lyrical part of the dithyramb was diversified, by transferring them from the choristers, by whom they had hitherto been carried on, to the leader of the chorus and to the actor. It was thus that, ten years before the birth of Aeschylus, the Dorian goat song acquired a dramatic tone. The tone was slight, it is true, but it was a significant forerunner of what became a powerful influence in the whole field of the drama.

In these crude Dionysian dramas by Thespis the leader sang a recital part, or

recitative, and was answered by the chorus. As the reciter sang, accompanied by a small wood-wind instrument, one member of the chorus impersonated Dionysus, acting out his sorrows, joys, and related episodes in his life. Here is the true beginning of drama—personification. The next step in the development of the drama was when both the reciter and actor assumed more than one role, acting the parts, not only of Dionysus, but also of his relatives. Eventually both the dialogue and action were more enriched by the diversified characters that were drawn into the play. From Dionysus' friends and relatives, the actors progressed to the portrayal of other gods and goddesses. The chorus, now limited in number to fifty, moved in procession or mass formation, rhythmically and harmoniously, and answered both the leader and the actor during the performance of the play. They still occupied the most important part in the drama, and did so until the time of Aeschylus, although they had long since ceased impersonating only satyrs, and had assumed various forms as fitted into the play that was being given at that time.

All this, of course, was put before the people without benefit of the actual theater as we know it today. There was no physical theater within four walls in Thespis' day as there is now. There was a natural outdoor auditorium, with a comparatively simple arrangement of ringed seats apparently constructed temporarily each festival time out of wood; there was a flat space for choral movement and acting called the orchestra; and early in the fifth century a green room was cut off from it for changes of dress and of mask. This was soon faced with a proscenium, the background of the play, which was always, however, wholly neutral architecturally and represented in a temporary structure the outdoor background that the play required—a king's dwelling, a sacred grove, the rock to which Prometheus was bound, and so on.

There was no stage, except the altar or palace steps or a rock for lifting the actors out of the chorus and into better view. Very little scenery was necessary, for the poet's words, by means of a choral ode, accomplished any required shift in scene or time. There was no curtain, of course, a Greek tragedy being continuous with dialogue and choral song alternating without pause; and all the actors and chorus members were men.

The mode of acting is still not understood, although it was doubtless artificial and declamatory; the masks made facial movement impossible, but the Greek actor developed a language of gesture and movement far more expressive than any on the stage today, acting an art exacting lifelong study and devotion; and shades of expressiveness were diligently sought after.

Even during the golden age of Greek drama, it never occurred to the dramatists to go outside the field of gods and legendary heroes for their plots and stories. The subject matter was conspicuously limited by the conception of the theater as a religious institution to the stirring deeds, the crimes, the hereditary sins, the expiations, and the conflicts of will between gods and hero or between lesser and greater gods. Every spectator knew at the beginning of the play what the end would be, just as we today can foresee every incident in any Christian Passion Play. The dramatic tension and suspense were none the less sustained and powerful, and the high subject matter lent a magnitude of emotion to the plays that perhaps cannot be encompassed in mere domestic tragedies and love dramas.

The dramatists usually took a single episode from a myth, dealing with an event in the life of a hero, and treated it as if it had happened in one single day. Aeschylus, first of the great tragedy writers, retained in his dramas more of the simplicity and literary conception of the old dithyrambs than did Sophocles or Euripides, caring more for the subject matter of the epic



poets, the mythology and the legendary-historic stories, with their vast religious implications, than for the more human legends that these later tragedians wove into such touching dramas.

Born of a noble family, in 525 B.C., at Eleusis, Aeschylus is known to have already competed in a dramatic contest by 499, but he did not win the prize until 484. He distinguished himself as a soldier, and as a traveller, too, but it is as a great dramatist that he has come down to posterity. For forty years his life was bound up intimately with the dramatic contests at the Great Dionysia in Athens and with the Theater of Dionysus; and between 499 and 458 he is supposed to have written ninety plays. Seven complete texts of his tragedies exist today, but there are records that he won the tragic prize twelve times.

This playwright has often been called the "father of tragedy," not only for his transcending poetic genius, by which he elevated the drama far above the level touched by his predecessors, but also for his innovation in introducing a second actor. When there had been only a chorus leader and one actor, conflict and dramatic structure had been possible only within a limited range. When Aeschylus provided two actors—each capable of taking several parts successively—he opened the way to elaboration of plot and characterization, and made the dialogue less a means of telling what had happened than a revelation of direct conflict.

The earliest of his plays extant is "The Suppliants," the oldest Greek play that has been preserved. It is compounded of a great deal of lyric poetry and very little dramatic action. In the later plays there is growing dramatic elaboration, increase of conflict, and greater theatricality. One of the finest of the tragedies, "Prometheus Bound," is very static, but it must be remembered that all the plays at the time of the dramatist were a part of a

related trilogy or tetralogy, and it was presented with the others on a single program. In the "Agamemnon," Aeschylus has come to full-plotted and highly theatrical composition. Here is Greek tragic drama developed into its characteristic largeness, majesty, and inevitability.

Sophocles marked progress toward both stricter dramatic intensity and greater freedom of dialogue. He went on toward a more compact and articulated play structure; and on the way he lost a little of the austere beauty of line of Aeschylus in favor of a freer language. He was a better craftsman and reflected more of the polish of art in a later softer time, but Aeschylus reflected the simplicity and dignity that were all around him.

Born in 495 B.C., Sophocles is reported to have written one hundred plays during his lifetime, although only seven are left to us in complete form today. He was the perfect flower of the Age of Pericles, with a nobility and stateliness of character, attuned to the love of man and universally loved in turn for his good nature and sweetness. He is famous not only for his plays but also in the history of the theater for the introduction of the third actor. His masterpiece and a characteristic example of his work may be found in "Oedipus Rex," which is perfectly built up, perfect in craftsmanship, and has unity, symmetry, and order. Sophocles not only had poetic genius, he also wrote plays that were theater works.

The third and last of the great Greek tragedians was Euripides. Born only fifteen years after Sophocles, in 480 B.C., he was representative of an entirely different age. He produced his first play in 455 B.C., when he was only twenty-five years old. He was the popular favorite during his lifetime and afterward for the reason that he humanized the drama. He portrayed human beings rather than symbols in his dramas, ascribed malignant as well as divine traits to the gods, and por-



trayed the new skepticism that was then creeping over Hellas. His "Medea" and "The Trojan Women" are said to have moved the great Greek audiences as they had never been moved before. His popularity, however, was no help to him when his plays came before the judges for prizes; and of the ninety-two that he is known to have written, only five were awarded honors. This fact was greatly due to the unorthodoxy of Euripides' ideas about the gods, and finally the censure became widespread and the criticism increased until public feeling crystallized into a demand for the dramatist's exile. He was driven from Athens altogether, and his last play, "The Bacchae," was written

away from his home. Notwithstanding the deep unhappiness that must have characterized the poet at that time, the play still contains lyric choruses that are better than any poet before him had achieved.

There are many tragic poets and tragic dramatists, but Aeschylus, Sophocles, and Euripides stand before the world as masters of their art; and from them came in direct evolution the dramatists of ancient Rome, then those of Elizabethan England, with Shakespeare topping them all; and, finally, those of today, with life as we know it furnishing the subject matter, which is cut free now from the old traditions of tragedy. D. N.

## DIRECTIONS IN AMERICAN PAINTING

THE exhibition, Directions in American Painting, opening on October 23 and continuing through December 14, 1941, is at once a departure and an adventure on the part of the Carnegie Institute. Taking the place of the regular Carnegie International, it will be different from any other show at the Carnegie Institute, or, for that matter, in the United States. It is frankly experimental and has as its main object the discovery and revelation of new talent in American art.

Directions in American Painting will be made up of three hundred oil paintings by three hundred living American artists selected by a jury of admission from canvases submitted to it by any artist who is a citizen of the United States and who has never exhibited in a Carnegie International. The three hundred paintings were selected from some 5,100 canvases offered to the jury at its New York and Pittsburgh meetings—the largest number of oil paintings ever submitted for an exhibition in the United States.

The members of the jury of admis-

sion and award were: Charles E. Burchfield, of Buffalo; Charles Hopkinson, of Boston; Kenneth Hayes Miller, of New York; and Millard Sheets, of Claremont, California. John O'Connor Jr., Acting Director of Fine Arts, served as chairman of the jury in place of the Director of Fine Arts, Homer Saint-Gaudens, who is at present on active duty in the Army. Seven monetary prizes totaling \$3,200 were awarded by the jury, as follows: First prize, \$1,000; second prize, \$700; third prize, \$500; first honorable mention, \$400; second honorable mention, \$300; third honorable mention, \$200; and fourth honorable mention, \$100.

It is certain that artists now unknown to fame and unclaimed will be news in the art world when the awards are announced as part of the Founder's Day exercises in the Carnegie Music Hall on the evening of October 23. The exhibition will be inaugurated immediately after the exercises when the guests in the Music Hall will be invited to proceed to the galleries to see the paintings.



#### CAN AMERICA LIVE UNTO ITSELF?

ON a straw vote that was taken recently from a cross section of American citizens, two questions were asked, in this form: 1. Would you enter the war now? 2. Would you stay out of the war? The responses indicated that a majority of those addressed were opposed to entering the war now; and it is this seemingly negative vote that has furnished our earnest isolationists with their arguments to oppose President Roosevelt's foreign policy, which, they say, if maintained by him, may carry our essential defense to a point where the chief aggressor will resent it by force of arms.

It is, however, a fact beyond question that the whole population of America would be, and are, opposed to enter any war at any time for any purpose whatever other than the sincere and necessary defense of our country and its vital interests. That is isolationism of a noble and exalted kind. In this sense it might be truthfully said that, upon all ideal and moral grounds, the American people are devoted to the isolation of their country from foreign wars and entanglements, exactly in accordance with the implorations of Washington and Jefferson when the great Republic was founded.

Furthermore, if it were true that the physical boundaries of our country were today limited by what is known as continental America, as in the days of Washington and Jefferson, there would

be no excuse at the bar of eternal justice for the United States to be other than an isolationist nation at any time. Indeed, it was not more than five or six years ago that an isolationist opinion was firmly held in many quarters where today it has been realized that the extension of American possessions and interests throughout the world has made our country a member of the family of nations with vital interests and vital obligations that are common to them all.

When the flames of the present wars were first lighted, originally by the Japanese and later by the Italians, our State Department was almost instantly concerned with the threatened extinction of all American rights covered by treaties in China and Ethiopia. Thus, at the beginning of the conflict, it was seen that if we were to shut our eyes against the consequences of the conquest of those countries, the political, economical, and social obligations which were bound up in our international development would be subject to the will of the aggressor nations.

Then came—to quote a high ecclesiastical authority—"the assault of Germany upon Christianity and civilization," in which the whole of continental Europe was ultimately swallowed up. But even in that most appalling tragedy of the ages there would be no justification under the traditions of our country for America to go to war to preserve those who were still struggling and to restore

those who had already fallen. We could not go to war as a knight errant. Isolationism was still a defensible policy.

But in nursing our isolationism against the roar of the hurricane we found that it was only an imaginary ring that we had thrown around an imaginary country. America was no longer spread out upon the geographical base where the founding fathers had established it. With her flag planted upon every island of the Pacific, in a straight line from San Francisco to Manila, and with the guarantee to her of every privilege of the most favored nation in every land under the sun, she was suddenly called upon to shrink back into the domains of the original wilderness, and to give up her acquired interests in the seven seas. Then, with an actual assault planned upon America, when it came her turn in the relentless scheme of world conquest, there could be no effective policy of appeasement against the overthrow of her dignity and peace. If the evil power that had broken loose in the world could not be restrained by the agonized victims who were fighting it, it could not be restrained by America, and the vote to stay out of war was an idle gesture. War was already destroying our substance like a devouring plague. And with our country now under attack it became impossible to hold fast to its moral, civilized, religious, and wishful policy of peace, and remain an isolated nation.

Before our country, under the force of aggression, goes into the struggle, the terms of peace, as declared in the Atlantic conference, have now been placed within the intelligence of all the nations of the world, including Germany. These terms aim to preserve representative government wherever the people in each national community shall choose that form of law and order. And representative government is not an idle term of words. It is, on the contrary, the precious development of the liberty of choice and the liberty of

action which has been spreading itself around the world among tribes and races for a thousand years, dating very closely upon the conquest of England by William the Conqueror. For it is not generally remembered that the first assumption of the liberty of the individual in his own country was clearly shadowed forth in that first indefinite but still significant form of Magna Charta which was exacted by the Saxon and Norman people of England from Henry I, the son of the Conqueror; and the general principle of parliamentary control was planted in England at that time, although the great charter of history was not formulated until King John's reign, a hundred years later. Statute after statute was thereafter enacted until there are now thirty-two laws in the support of liberty embodied in the constitution of England, including the Grand Remonstrance composed by Oliver Cromwell, John Hampden, and John Eliot which struck a fatal blow at the despotic powers claimed by the Stuart kings and brought all future legislation within the mastery of Parliament.

The first emigration of English settlers carried these eternal principles of liberty across the Atlantic, to be established in the American wilderness, where there was no tradition, no ambition, and no dictation to impede their growth. And it is for the preservation of these things that so many men and nations are striving in the agony of an unwanted war; and it is because of them, as the heritage of enlightened men, that America cannot live unto herself as an isolated nation.

But even now, when the war clouds are growing darker every day, America holds in her hand, with benevolent emphasis, the offer of a just and forgiving peace on terms of universal liberty that could and would stop the awful conflict tomorrow morning—if the German people, at last unfettered, would but unite to seek for reconciliation and join in rebuilding a shattered world which they have set in flames.

# THE CARNEGIE MAGAZINE

## CARNEGIE INSTITUTE OFFICERS AND COMMITTEES

SAMUEL HARDEN CHURCH, *President*  
WILLIAM FREW, *Vice President*  
AUGUSTUS K. OLIVER, *Secretary*  
RICHARD K. MELLON, *Treasurer*

### MUSEUM COMMITTEE

GEORGE H. CLAPP, *Chairman*  
MARCUS AARON                      H. J. HEINZ II  
FREDERICK G. BLACKBURN      RICHARD K. MELLON  
HOWARD N. EAVENSON          W. L. MELLON  
GEORGE E. EVANS                JAMES C. REA  
THOMAS J. GALLAGHER          FREDERIC SCHAEFER  
JOHN B. SEMPLE

### FINE ARTS COMMITTEE

JOHN G. FRAZER, *Chairman*  
EDWARD DUFF BALKEN          AUGUSTUS K. OLIVER  
J. FREDERIC BYERS              CHARLES J. ROSENBLOOM  
WILLIAM FREW                  FREDERIC SCHAEFER  
MOORHEAD B. HOLLAND          CORNELIUS D. SCULLY  
ROY A. HUNT                      WILLIAM WATSON SMITH

### AUDITING COMMITTEE

FRANK J. LANAHAN, *Chairman*  
GEORGE E. EVANS                A. L. WOLK

### FINANCE COMMITTEE

RICHARD K. MELLON, *Chairman*  
ARTHUR E. BRAUN                WILLIAM FREW  
JOHN F. CASEY                    GEORGE T. LADD

### PENSION COMMITTEE

MOORHEAD B. HOLLAND, *Chairman*  
HOWARD N. EAVENSON          EDWARD J. LEONARD  
JOHN G. FRAZER                  GEORGE T. LADD

### MUSIC HALL COMMITTEE

WILLIAM P. WITHEROW, *Chairman*  
WILLIAM FREW                    EDWARD J. LEONARD  
JOHN F. LABOON                  JAMES C. REA

### ADVISORY COMMITTEE

MARCUS AARON                    MOORHEAD B. HOLLAND  
JOHN F. CASEY                    FRANK J. LANAHAN  
S. H. CHURCH                      RICHARD K. MELLON  
GEORGE H. CLAPP                AUGUSTUS K. OLIVER  
JOHN G. FRAZER                  JAMES L. O'TOOLE JR.  
WILLIAM FREW                    WILLIAM WATSON SMITH  
WILLIAM P. WITHEROW

## CARNEGIE INSTITUTE STAFF

SAMUEL HARDEN CHURCH, *President*

J. C. JEFFRIES, *Auditor*  
WILLIAM A. MORTEN, *Assistant Treasurer*  
MINNIE C. RANKIN, *President's Secretary*

### DEPARTMENT OF FINE ARTS

HOMER SAINT-GAUDENS, *Director*  
JOHN O'CONNOR JR., *Assistant Director*  
GUILLAUME LEROLLE, *European Representative*  
ANNE K. STOLZENBACH, *Secretary*  
MARGARET M. LEE, *Director of Educational Work*

### CARNEGIE MUSEUM

ANDREY AVINOFF, *Director*  
O. E. JENNINGS, *Curator of Botany and Director of Public Education*  
STANLEY T. BROOKS, *Curator of Invertebrate Zoology*  
J. KENNETH DOUTT, *Curator of Mammalogy*  
OTTMAR F. VON FUEHRER, *Staff Artist*  
ARTHUR W. HENN, *Curator of Ichthyology*  
J. LeROY KAY, *Curator of Vertebrate Paleontology*  
M. GRAHAM NETTING, *Curator of Herpetology*  
SYDNEY PRENTICE, *Draftsman*  
W. E. CLYDE TODD, *Curator of Ornithology*  
I. P. TOLMACHOFF, *Curator of Invertebrate Paleontology and Acting Curator of Mineralogy*  
EUGENIA MCCALLA, *Secretary*

### CARNEGIE MUSIC HALL

MARSHALL BIDWELL, *Organist and Director of Music*  
ROY B. AMBROSE, *Manager*

### DEPARTMENT OF BUILDINGS & GROUNDS

ROY B. AMBROSE, *Manager*  
HATTIE W. STOUPPE, *Secretary*

### BEQUESTS

In making a will, money left to the Carnegie Institute should be covered by the following phrase:

*I do hereby give and bequeath to the  
CARNEGIE INSTITUTE  
in the City of Pittsburgh, Pennsylvania.*

.....Dollars

# THE CARNEGIE MAGAZINE

## CARNEGIE INSTITUTE OF TECHNOLOGY

### OFFICERS AND COMMITTEES

SAMUEL HARDEN CHURCH, *Chairman*  
 WILLIAM FREW, *Vice Chairman*  
 AUGUSTUS K. OLIVER, *Secretary*  
 RICHARD K. MELLON, *Treasurer*

### EXECUTIVE COMMITTEE

WILLIAM FREW, *Chairman*  
 AUGUSTUS K. OLIVER, *Secretary*

FREDERICK G. BLACKBURN JOHN F. LABOON  
 ROBERT E. DOHERTY GEORGE T. LADD  
 HOWARD N. EAVENSON FRANK J. LANAHAN  
 GEORGE E. EVANS RICHARD K. MELLON  
 \*J. C. HOBBS \*ROSWELL MILLER  
 ROY A. HUNT WILLIAM S. MOORHEAD  
 \*F. B. JEWETT \*CHARLES E. WILSON  
 WILLIAM P. WITHEROW  
 (\*Special members)



### STAFF

ROBERT ERNEST DOHERTY, President  
 WEBSTER N. JONES, Director, College of Engineering  
 GLENDINNING KEEBLE, Director, College of Fine Arts  
 CHARLES WATKINS, Director, Margaret Morrison Carnegie College  
 WILLARD E. HOTCHKISS, Director, Division of Humanistic and Social Studies  
 RALPH MUNN, Director, Carnegie Library School  
 FRANCES H. KELLY, Associate Director  
 BERYL E. WARDEN, Director, Division of Student Personnel and Welfare  
 E. K. COLLINS, Registrar  
 H. R. PATTON, Controller

### BEQUESTS

And bequests to the Carnegie Institute of Technology should be phrased like this:

*I do hereby give and bequeath to the*  
**CARNEGIE INSTITUTE OF TECHNOLOGY**  
*of Pittsburgh, Pennsylvania.*

.....Dollars

## CARNEGIE LIBRARY OFFICERS AND COMMITTEES

SAMUEL HARDEN CHURCH, *President*  
 WILLIAM WATSON SMITH, *Vice President*  
 JAMES L. O'TOOLE JR., *Secretary*  
 RICHARD K. MELLON, *Treasurer*

### LIBRARY COMMITTEE

MARCUS AARON, *Chairman*  
 JOHN F. CASEY WILLIAM S. MOORHEAD  
 WALTER R. DEMMLER A. L. WOLK

### BUILDINGS AND GROUNDS COMMITTEE

JOHN F. CASEY, *Chairman*  
 ARTHUR E. BRAUN CORNELIUS D. SCULLY  
 THOMAS J. GALLAGHER FRED W. WEIR

### FINANCE COMMITTEE

RICHARD K. MELLON, *Chairman*  
 ARTHUR E. BRAUN JOHN F. CASEY

### AUDITING COMMITTEE

FRANK J. LANAHAN, *Chairman*  
 GEORGE E. EVANS A. L. WOLK



### STAFF

RALPH MUNN, Director  
 ADALINE BERNSTEIN, Head of Order Department  
 JAMES E. BRYAN, Head of Adult Lending Department  
 MARY E. FOSTER, Head of Schools Department  
 ELLWOOD H. MCCLELLAND, Technology Librarian  
 RUTH D. MCCOLLOUGH, Head of Catalogue Department  
 ALICE THURSTON MCGIRR, Reference Librarian  
 ARTHUR D. SCOTT, Head of Printing and Binding Department  
 ELVA S. SMITH, Head of Boys and Girls Department  
 MARTHA V. WIRTH, Executive Secretary

### BEQUESTS

And bequests for the Carnegie Library may be as follows:

*I do hereby give and bequeath to the*  
**CARNEGIE LIBRARY OF PITTSBURGH**

.....Books, or.....Dollars

NOTE: The President is ex officio a member of all Committees.

## THE CARNEGIE MAGAZINE

### BOARD OF TRUSTEES WHO'S WHO

Under the charters the same thirty-six trustees serve both the Carnegie Institute and the Carnegie Institute of Technology, and eighteen of them (starred) are also trustees of the Carnegie Library.

**\*MARCUS AARON**

*University of Pittsburgh. President Pittsburgh Board of Public Education. Museum, Library, Advisory.*

**EDWARD DUFF BALKEN**  
*Princeton. Art.*

**FREDERICK G. BLACKBURN**  
*Yale. Carnegie Institute of Technology. Vice President Union Trust Company. Museum, Tech.*

**\*ARTHUR E. BRAUN**  
*President Farmers Deposit National Bank. Buildings and Grounds, Finance.*

**\*J. FREDERIC BYERS**  
*Yale. Chairman A. M. Byers Company. Art.*

**\*JOHN F. CASEY**  
*Duquesne University. Chairman John F. Casey Company. Library, Buildings and Grounds, Finance, Advisory.*

**\*SAMUEL HARDEN CHURCH**  
*Director Blaw-Knox Company. Trustee Carnegie Corporation of New York.*

**GEORGE H. CLAPP**  
*University of Pittsburgh. President Board of Trustees University of Pittsburgh. Museum, Advisory.*

**\*WALTER R. DEMMLEE**  
*City Council. Library.*

**ROBERT E. DOHERTY**  
*University of Illinois. President Carnegie Institute of Technology. Tech.*

**HOWARD N. EAVENSON**  
*Swarthmore. Mining Engineer. Museum, Pension, Tech.*

**\*GEORGE E. EVANS**  
*University of Pittsburgh. City Council. Museum, Auditing, Tech.*

**JOHN G. FRAZER**  
*Princeton. Law School University of Pittsburgh. Reed, Smith, Shaw and McClay. Art, Advisory, Pension.*

**WILLIAM FREW**  
*Yale. Law School University of Pittsburgh. Moore, Leonard and Lynch. Art, Tech, Finance, Music Hall, Advisory.*

**\*THOMAS J. GALLAGHER**  
*City Council. Museum, Buildings and Grounds.*

**H. J. HEINZ II**  
*Yale. President H. J. Heinz Company. Museum.*

**MOORHEAD B. HOLLAND**  
*Princeton. Law School University of Pittsburgh. Vice President Peoples-Pittsburgh Trust Company. Art, Pension, Advisory.*

**ROY A. HUNT**

*Yale. President Aluminum Company of America. Tech, Art.*

**JOHN F. LABOON**

*Carnegie Institute of Technology. Director Allegheny County Bridges, Highways, and Tunnels. Tech, Music Hall.*

**GEORGE T. LADD**

*Yale. President United Engineering and Foundry Company. Finance, Tech, Pension.*

**\*FRANK J. LANAHAN**

*President Fort Pitt Malleable Iron Company. President Bank of McKees Rocks. Tech, Auditing, Advisory.*

**\*EDWARD J. LEONARD**

*City Council. Music Hall, Pension.*

**\*RICHARD K. MELLON**

*Princeton. President Mellon National Bank. Director Pennsylvania Railroad Company. Museum, Finance, Advisory.*

**\*W. L. MELLON**

*Chester Military Academy. Chairman of the Board, Gulf Oil Corporation. Museum.*

**\*WILLIAM S. MOORHEAD**

*Yale. Law School University of Pittsburgh. Moorhead and Knox. Tech, Library.*

**AUGUSTUS K. OLIVER**

*Yale. Chairman Board of Directors, Pittsburgh Coal Company. President Board of Trustees Shady Side Academy. Art, Tech, Advisory.*

**\*JAMES L. O'TOOLE JR.**

*Notre Dame University. Law School Notre Dame University. President City Council. Museum, Advisory.*

**JAMES C. REA**

*Princeton. Vice President Oliver Iron and Steel Company. Museum, Music Hall.*

**CHARLES J. ROSENBLOOM**

*Yale. President Rosenbloom Finance Corporation. Art.*

**FREDERIC SCHAEFER**

*University of Pittsburgh. President Schaefer Equipment Company. Museum, Art.*

**\*CORNELIUS D. SCULLY**

*Mayor of Pittsburgh. University of Pennsylvania. Law School University of Pittsburgh. Art, Buildings and Grounds.*

**JOHN B. SEMPLE**

*Lehigh. Museum.*

**\*WILLIAM WATSON SMITH**

*Princeton. Smith, Buchanan and Ingersoll. Art, Advisory.*

**\*FRED W. WEIR**

*City Council. Buildings and Grounds.*

**WILLIAM P. WITHEROW**

*Yale. President Blaw-Knox Company. Music Hall, Tech, Advisory.*

**\*A. L. WOLK**

*Columbia University. Law School University of Pittsburgh. City Council. Auditing, Library.*



merica.

r Alle-  
unnels.

foundry

mpany.  
diting,

Bank.  
y. Ma-

of the

sburgh.

sburgh  
s Shady

re Dame  
Aussem,

ad Steel

oration.

Schaefer

ylvania.  
Build-

oll. Art,

. Music

iversity of  
ary.